

Artificial Intelligence

Where are we, and where are we going?

April 3, 2014

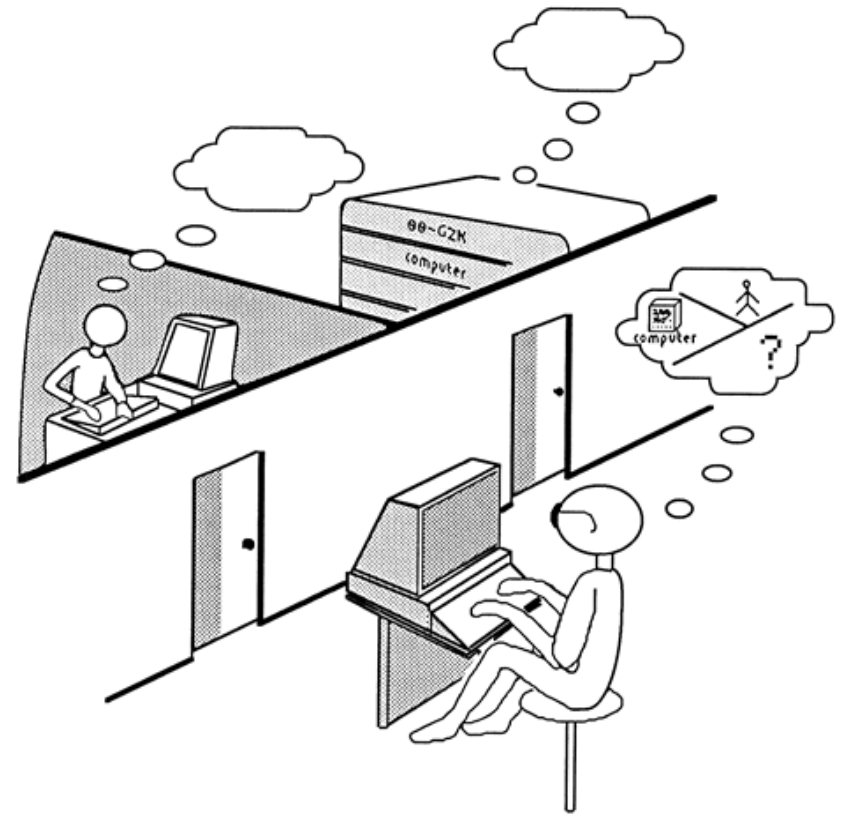
Human or Computer?

- Which is easier for which?
- Task A
 - Add 1,000 numbers, each four digits long
- Task B
 - Identify the cat in the picture to the right



The Turing Test

- Says the following:
- 1. A human sits across from (a) another human and (b) a computer
 - But cannot see them
- 2. Asks both the same question
 - And both reply
- 3. If the human cannot tell which is (a) and which is (b), (b) passes the Turing Test



Cleverbot

- <http://www.cleverbot.com>
 - Started in 1997
 - Note: This agent is unique, in a sense that its responses are NOT programmed
 - It has learned overtime how to reply
- 59% of people surveyed in 2011 believed this was human
 - Generally 50% nowadays is considered a good 'benchmark'
 - Guess that means 100% is pretty difficult...

Deep Blue (1997)

- Defeats world chess champion



- Has anyone ever beaten the hardest level of Mac Chess?
 - Btw, I haven't....

Watson (2011)

- Wins on Jeopardy!
 - And beat 'Ken'!



- Let's watch a bit:
 - <http://www.youtube.com/watch?v=YLR1byLoU8M>
- Question: How did computers become so intelligent?

Example: Strategy Games

- Nim (spin-off of Tic-Tac-Toe): Rules
 - I have nine spaces:
 - _____
 - Players alternate by placing 1, 2 or 3 X's and O's
 - The one who places their mark in the **red (last) spot** wins
- Visual Example:

• -----	Game Start
• XXX-----	X's Turn
• XXXO-----	O's Turn
• XXXOX----	X's Turn
• XXXOXOO--	O's Turn
• XXXOXOOXX	X wins!

Nim

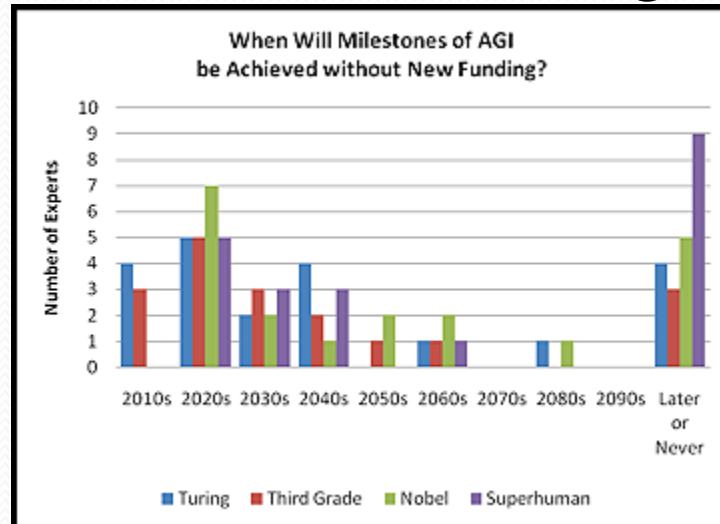
- Couple of students play me (the human) first
 - At the board
- Note a computer has a concept of memory!
 - Not as large as ours
 - But, less forgetful! Unless of course your hardware crashes...
 - Now I will be a computer... someone play me! 😊

Where We Are Now?

- Brink of passing the Turing test (Keim ,2012):
 - <http://www.wired.com/wiredscience/2012/04/turing-test-revisited/>
- Verbal ability of a 4-year old (McKendrick, 2013):
 - <http://www.smartplanet.com/blog/bulletin/artificial-intelligence-now-has-verbal-ability-of-4-year-old-is-that-progress/24290>
- Smart search engines
 - <http://www.google.com>
 - Certainly an example of AI!

Where Will We Go?

- That's for us to discuss now. Here's a 2010 graph with projections:



- Questions to ponder:
 - Will a machine and a human ever be indistinguishable?
 - How much is 'too much', or is there such a thing?
 - Are there certain decisions a machine 'cannot make'?